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OFFICE OF THE LIEUTENANT GOVERNOR
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MEMORANDUM

TO: Gary Mendivil, Department of Environmental Conservation

FROM: April Simpson, Office of the Lieutenant Governor
465.4081

DATE: January 26, 2022

RE: Filed Permanent Regulations: Department of Environmental Conservation

Department of Environmental Conservation regulations re: municipal solid waste facility monitoring standards (18 AAC 60)

Attorney General File:	2018200342
Regulation Filed:	1/26/2022
Effective Date:	2/25/2022
Print:	241, April 2022

cc with enclosures: Joseph Felkl, Department of Law
Judy Herndon, LexisNexis

ORDER ADOPTING CHANGES TO REGULATIONS
OF DEPARTMENT OF ENVIRONMENTAL CONSERVATION

The attached 37 pages of regulations, dealing with 18 AAC 60 Solid Waste regulations, are adopted and certified to be a correct copy of the regulation changes that the Department of Environmental Conservation adopts under the authority of AS 44.46.020; AS 46.03.020; and AS 46.03.100 and after compliance with the Administrative Procedure Act (AS 44.62), specifically including notice under AS 44.62.190 and 44.62.200 and opportunity for public comment under AS 44.62.210.

This action is not expected to require an increased appropriation.

In considering public comments, the Department of Environmental Conservation paid special attention to the cost to private persons of the regulatory action being taken.

The regulation changes adopted under this order take effect on the 30th day after they have been filed by the lieutenant governor, as provided in AS 44.62.180.

Date: January 24, 2022

Jason W. Brune

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Date: 2022.01.24 08:20:36 -09'00'

Jason W. Brune, Commissioner

FILING CERTIFICATION

I, Keven Meyer, Lieutenant Governor for the State of Alaska, certify that on January 26, 2022, at 9:57 AM/PM I filed the attached regulations according to the provisions of AS 44.62.040 - 44.62.120.

Kevin Meyer, Lieutenant Governor

Effective: February 25, 2022.

Register: 241, April 2022

18 AAC 60.210(b)(1)(D) is amended to read:

(D) information required by **18 AAC 60.820(d)** [18 AAC 60.820(c)] or 18 AAC 60.900 to support any waiver requested;

(Eff. 1/28/96, Register 137; am 6/28/96, Register 138; am 10/29/98, Register 148; am 7/11/99, Register 151; am 6/30/2002, Register 162; am 9/7/2002, Register 163; am 9/5/2010, Register 195; am 4/8/2012, Register 202; am 4/12/2013, Register 206; am 10/27/2017, Register 224; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.010 AS 46.03.100
AS 44.46.025 AS 46.03.020 AS 46.03.110

18 AAC 60.228(d) is amended to read:

(d) For a Class I MSWLF, the demonstration required by (a) of this section must also contain the demonstration required by **18 AAC 60.820(d)** [18 AAC 60.820(c)]. (Eff. 9/7/2002, Register 163; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.020 AS 46.03.110
AS 46.03.010 AS 46.03.100 AS 46.06.080

18 AAC 60.350 is repealed:

18 AAC 60.350. Control of explosive gases. Repealed. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 9/7/2002, Register 163; repealed 2/25/2022, Register 241)

18 AAC 60.375 is amended to read:

18 AAC 60.375. Corrective action at a MSWLF. The owner or operator of a MSWLF shall implement corrective action at the facility when required by **18 AAC 60.800(e), 18 AAC 60.810(j)** [18 AAC 60.815, 18 AAC 60.820], or 18 AAC 60.860. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.800 AS 46.09.020
AS 46.03.020

18 AAC 60.380 is amended to read:

18 AAC 60.380. MSWLF recordkeeping requirements. In addition to the requirements of 18 AAC 60.235, the owner or operator of a MSWLF shall keep the following records, if applicable, in the facility's operating record:

(1) a location restriction demonstration as required under 18 AAC 60.305 - 18 AAC 60.320;

(2) records of gas monitoring and corrective action related to gas problems as required in **18 AAC 60.805** [18 AAC 60.350];

(3) the documentation **for** [COLLECTED IN SUPPORT OF A REQUEST FOR REDUCTION IN FREQUENCY OF GAS MONITORING AND] any remediation plan required by **18 AAC 60.805(h)** [18 AAC 60.350];

(4) leachate recirculation records as required by 18 AAC 60.360(c). (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.020 AS 46.03.110
AS 46.03.010 AS 46.03.100

18 AAC 60.397(a)(4) is amended to read:

(4) maintain and operate any existing gas monitoring system as implemented under **18 AAC 60.805** [18 AAC 60.350].

(Eff. 1/28/96, Register 137; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020

18 AAC 60.432(g)(2) is amended to read:

(2) sample and analyze groundwater or surface water as required under **18 AAC 60.810 - 18 AAC 60.860** [18 AAC 60.810 AND 18 AAC 60.820 - 18 AAC 60.860].

(Eff. 10/27/2017, Register 224; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020 AS 46.03.800

18 AAC 60.460(e) is amended to read:

(e) The owner or operator of an inert waste monofill shall construct a final cover of soil material at least 24 inches thick, graded to promote drainage without erosion, and shall

revegetate it. The department will approve an alternate final cover design if the applicant demonstrates that the alternate design will protect public health, safety, and welfare, and the environment. After completion of the final cover on a monofill with a groundwater monitoring system, the owner or operator shall conduct detection monitoring at the frequency required by **18 AAC 60.825(i)** [18 AAC 60.850(b)]. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.800
AS 46.03.010 AS 46.03.110 AS 46.03.810
AS 46.03.020

18 AAC 60.470(p) is amended to read:

(p) After completion of the final cover, the owner or operator of a sewage solids monofill with a groundwater monitoring system shall conduct detection monitoring at the frequency required by **18 AAC 60.825(i)** [18 AAC 60.850(b)]. (Eff. 1/28/96, Register 137; am 7/11/99, Register 151; am 9/7/2002, Register 163; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.070 AS 46.03.800
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020 AS 46.03.110 AS 46.14.110

18 AAC 60.480(e) is amended to read:

(e) The final cover must be constructed of soil material at least 24 inches thick, graded to promote drainage without erosion, and revegetated. The department will approve an alternate

final cover design if the applicant demonstrates that the alternate design will protect public health and the environment. After completion of the final cover on a monofill with a groundwater monitoring system, the owner or operator shall conduct detection monitoring at the frequency required by **18 AAC 60.825(i)** [18 AAC 60.850(b)]. (Eff. 1/28/96, Register 137; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020

18 AAC 60.490(c) is amended to read:

(c) The owner or operator of a monofill shall conduct visual monitoring, for settlement and erosion, for at least 60 consecutive months immediately following the closure. The department will require periodic visual monitoring at a monofill for up to 360 consecutive months immediately following the closure, if based on the type of waste and the site's compliance history under this chapter, the department determines that the monitoring is necessary to protect the public health, safety, or welfare, or the environment. In addition to visual monitoring, the department will require groundwater, surface water, leachate, gas, and thermal monitoring at a monofill if the department finds that monitoring is necessary to protect the public health, safety, or welfare, or the environment. The department will also require additional monitoring and corrective action necessary to meet the standards in **18 AAC 60.800(e), 18 AAC 60.810(j),** [18 AAC 60.815] and 18 AAC 60.860. The department will extend the post-closure monitoring period if necessary to ensure that the facility will not harm the public health, safety,

or welfare, or the environment. At the end of the post-closure period, the owner or operator shall submit a report to the department that describes site conditions and summarizes the information collected during post-closure period. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 7/11/99, Register 151; am 10/27/2017, Register 224; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020 AS 46.03.800

18 AAC 60.800(a) is amended to read:

18 AAC 60.800. Visual [AND AIR] monitoring. (a) For a facility required to have a permit **or authorization** under 18 AAC 60.200, the permittee shall design a visual monitoring program**, as appropriate to the facility,** to detect and document **the following:**

(1) signs of damage or potential damage to any component of the facility from settlement, ponding, leakage, thermal instability, frost action, erosion, thawing of the waste, or operations at the facility;

(2) damage to **surface water sampling locations and** the above-grade portions of groundwater monitoring devices**, gas monitoring probes,** [OR] thermistors**, and all other monitoring devices**;

(3) violations of

(A) the facility design approved under 18 AAC 60.203;

(B) the operations plan approved as part of a permit issued under 18 AAC 60.215;

(C) conditions of the permit or authorization for the facility; and

(D) any regulations applicable to the facility [PERMIT CONDITIONS OR REQUIREMENTS OF THIS CHAPTER, SPECIFICALLY INCLUDING THE REQUIREMENTS IN 18 AAC 60.225(a) THAT ARE READILY OBSERVABLE];

(4) escape of waste or leachate or any unauthorized waste disposal;

(5) slippage of a flexible liner or damage to its anchor;

(6) erosion, a tear, a crack, or other damage to the visible portion of a liner;

(7) damage to the structural integrity of a containment structure, retaining wall, erosion control, or diversion structure;

(8) fire or combustion in the waste; and

(9) evidence of death or stress to fish, wildlife, or vegetation that might be caused by the facility.

18 AAC 60.800(b) is repealed:

(b) Repealed 2/25/2022.

18 AAC 60.800(c) is amended to read:

(c) The permittee shall ensure that a person [WHO IS] familiar with **the** permit **or authorization** requirements, [WITH] the applicable requirements of this chapter, and [WITH] the visual monitoring **program** [PLAN], conducts a visual inspection of the facility once each month, or at a frequency appropriate to facility operations as determined by the department and specified in the permit.

18 AAC 60.800 is amended by adding a new subsection to read:

(e) If the visual monitoring program identifies a deficiency in any of the items in (a) of this section, the facility's owner or operator shall take prompt action to correct the deficiency and place a written record of the completed corrective action in the operating record of the facility. The owner or operator shall provide written notification to the department at the time the deficiency is identified and at the time the corrective action is completed. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020 AS 46.03.800

18 AAC 60 is amended by adding a new section to read:

18 AAC 60.805. Landfill gas monitoring. (a) If the department determines that a potential landfill gas hazard exists at a landfill facility due to the waste disposed in the landfill or conditions present at the facility, the owner or operator of the landfill shall implement a landfill gas monitoring program in compliance with this section. Gas monitoring required under this section must comply with applicable levels and conditions established by the department on a site-specific basis to protect the public health, safety, and welfare, and is subject to the requirements of (e) - (h) of this section. At a minimum, every Class I or Class II MSWLF must implement a program for monitoring methane. Through a facility-specific analysis, the department will determine which other gases each Class I and Class II MSWLF must monitor.

(b) Monitoring under this section must be conducted at least quarterly and in compliance

with a written plan approved by the department.

(c) A landfill gas monitoring program under this section must detect and measure gases likely to be generated in the landfill based on the type of waste disposed in the landfill.

(d) A methane monitoring program must ensure that the concentration of methane gas generated by the facility does not exceed

(1) 25 percent of the lower explosive limit for methane in facility structures, excluding gas control or recovery system components; and

(2) the lower explosive limit for methane at the facility property boundary or alternate location approved during the permitting process.

(e) A landfill gas monitoring program must utilize both

(1) monitoring devices in facility structures; and

(2) unless otherwise approved by the department during the permitting process, subsurface probes at

(A) the facility boundary; or

(B) an alternate location approved by the department during the permitting process.

(f) The locations selected for

(1) monitoring the subsurface must be based on

(A) soil conditions;

(B) the hydrogeologic conditions underlying the facility and adjacent property;

(C) the hydraulic conditions underlying the facility and adjacent property; and

(D) the proximity of facility structures and property boundaries to the waste mass; and

(2) monitoring within facility structures must consider the presence and location of

(A) crawl spaces, basements, closets, and other enclosed spaces in which gases can be trapped; and

(B) electrical boxes and conduit, plumbing drains and water supply lines, and other pathways through which gases can enter the structures.

(g) If methane levels exceeding the limits set in (d) of this section are detected, or another landfill gas exceeds the applicable level or condition established by the department under (a) of this section, the owner or operator shall immediately notify the department by telephone and in writing, and shall take all necessary steps to reduce or dissipate the concentrations of methane or other landfill gas, as applicable, to protect the public health, safety, and welfare.

(h) Not later than 30 days after detection under (g) of this section, the owner or operator shall submit to the department a long-term remediation plan for the landfill gas release. Not later than 60 days after the detection under (g) of this section, or upon approval of the plan, whichever is sooner, the owner or operator shall initiate remediation efforts under the long-term remediation plan and submit written notification to the department that remediation under the plan has been initiated. Upon approval of the plan by the department, the owner or operator shall place a copy of the plan in the operating record and implement the approved plan. (Eff. 2/25/2022,

Register 241)

Authority: AS 44.46.020 AS 46.03.020 AS 46.03.110
AS 46.03.010 AS 46.03.100 AS 46.03.810

18 AAC 60.810 is repealed and readopted to read:

18 AAC 60.810. Surface water monitoring. (a) The department may require surface water monitoring at any time during the active life and post-closure care period of a facility required to have a permit or authorization under 18 AAC 60.200 or 18 AAC 60.211. Surface water monitoring is required at a facility if the department determines, based on site-specific conditions and practices, that the solid waste stored or disposed at the facility increases the potential for constituents of concern to be present

(1) in surface run-off or other liquid discharge from the facility; or

(2) in nearby surface water that receives surface run-off or other liquid discharge from the facility.

(b) If surface water monitoring is required under (a) of this section, surface water must be sampled at locations selected by the permittee and approved by the department. Collected samples must

(1) detect, at an acceptable level of sensitivity, representative concentrations of the constituents of concern in either surface run-off or other liquid discharge that leaves the facility, or in nearby surface water that receives run-off or other liquid discharge from the facility; and

(2) provide quantitative information about constituents of concern in surface run-

off or nearby surface water while minimizing interference from sources other than the facility's waste management operations.

(c) When establishing a sampling location under this section, consideration must be given to the

(1) flow direction of surface run-off on the facility and on surrounding land;

(2) the proximity of surface water bodies to the facility boundary;

(3) the hydrology of the landfill and surrounding area; and

(4) the location and proximity of any surface water used as a drinking water source.

(d) If surface water monitoring is required under (a) of this section, sampling must occur during high-flow and low-flow conditions each year unless another schedule is approved or required by the department.

(e) If surface water monitoring is required under (a) of this section, monitoring must include the analytes listed in 40 C.F.R. Part 258, Appendix I, as amended through August 1, 2005, adopted by reference, and any additional analytes and parameters the department determines are necessary based on the type of waste disposed in the facility. The department may add analytes and parameters to the surface water monitoring program at any time during the active life of the facility based on the type of waste disposed in the facility and the available analytical data. The department may delete analytes and parameters from the surface water monitoring program based on available analytical data or if the department determines that the analytes and parameters are not expected to be in or derived from the waste disposed in the landfill.

(f) If surface water monitoring is required under (a) of this section, the owner or operator of the facility shall develop a surface water monitoring plan that includes a quality assurance project plan and that defines consistent sampling and analysis procedures designed to ensure that monitoring meets the requirements of (b) - (e) of this section and any site-specific requirements that the department determines are necessary. The surface water monitoring plan must be approved by the department, and the owner or operator shall place the approved plan in the operating record of the facility. The surface water monitoring plan

(1) shall be revised at the time of permit renewal and whenever a change in the monitoring program is requested by or approved by the department; and

(2) must include procedures and techniques for

(A) sample collection;

(B) sample preservation and shipment;

(C) analytical procedures;

(D) chain of custody control; and

(E) quality assurance and quality control.

(g) If surface water monitoring is required under (a) of this section, the owner or operator shall

(1) submit surface water sampling data and analyses to the department, in the format approved by the department, not later than 90 days after completing each sampling event or on an alternate date or schedule approved by the department; and

(2) maintain in the operating record of the facility a complete record of all surface water monitoring conducted under this section.

(h) After a surface water monitoring program is established under this section, the owner or operator of the facility shall continue to comply with the approved surface water monitoring plan while the facility is active and throughout the post-closure monitoring period.

(i) A facility violates a surface water standard if any sampling location shows there is a statistically significant change or a statistically significant increasing trend in constituent concentrations, or a reported constituent concentration exceeds the applicable surface water standard, described in the department's *Surface Water Standards Table*. If a violation of a surface water standard is documented at any of the approved sampling locations, the owner or operator of the facility shall submit written notification of the violation to the department not later than 14 days after detecting the violation, unless the violation is in a water body that is used as a drinking water source, in which case the written notification must be submitted immediately after the owner or operator of the facility becomes aware of the violation.

(j) The department may require corrective action for any surface water quality violation. The requirements of any necessary corrective action will be based on the nature of the surface water monitoring program, the location of the violation, and the risk the violation poses to public health or the environment. If the violation is documented at a sampling location that monitors

(1) surface run-off or other liquid discharge from the facility, corrective action must consist of whatever actions are necessary to correct the violation by decreasing the constituent concentrations in surface run-off or liquid discharge from the facility;

(2) a nearby surface water body, the owner or operator shall evaluate the extent of the contamination and take action as needed to reduce constituent concentrations in the affected surface water body to less than the applicable surface water standard, described in the

department's *Surface Water Standards Table*. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 2/25/2022, Register 241)

Authority: AS 44.46.020 [AS 46.03.070] AS 46.03.800
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020 AS 46.03.110

18 AAC 60.815 is repealed:

18 AAC 60.815. Corrective action for problems discovered during visual and surface water monitoring or during an inspection. Repealed. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; repealed 2/25/2022, Register 241)

18 AAC 60.820 is repealed and readopted to read:

18 AAC 60.820. Groundwater monitoring required. (a) Except for the facilities listed in (b) of this section, all facilities that require a permit under this chapter must conduct groundwater monitoring in accordance with 18 AAC 60.820 - 18 AAC 60.860. Any facility at which groundwater monitoring is required must use a groundwater monitoring system that meets the requirements of 18 AAC 60.825.

(b) Unless determined otherwise under (c) of this section, groundwater monitoring is not required at the following facilities:

(1) an asbestos monofill;

(2) an inactive reserve pit subject to 18 AAC 60.440;

(3) a solid waste storage or treatment facility;

(4) any one-time-use landfill authorized by the department under 18 AAC 60.200(d);

(5) a freezeback landfill under 18 AAC 60.228;

(6) a disposal facility operating under a general permit that does not require groundwater monitoring;

(7) a Class III MSWLF;

(8) a Class II MSWLF, sewage solids monofill, wood waste monofill, or inert waste monofill located in an area that receives 25 inches or less in total precipitation each year; or

(9) a facility operating under an authorization under 18 AAC 60.200(c), (d), or (e).

(c) The department will require groundwater monitoring at a facility listed in (b) of this section if

(1) the owner or operator of the facility knows or should know that the facility is contaminating the uppermost aquifer beneath the facility;

(2) the department finds that groundwater monitoring and corrective action are necessary to protect the uppermost aquifer beneath the facility;

(3) the department has informed the owner or operator of the facility of credible evidence that the facility is contaminating the uppermost aquifer beneath the facility; or

(4) the facility is located within a drinking water protection area delineated under 18 AAC 80.015 for an active public water system source and the department determines that the facility has the potential to impact the quality of drinking water from that source.

(d) The department will suspend groundwater monitoring under 18 AAC 60.820 - 18 AAC 60.860 at a facility if the owner or operator demonstrates that there is no potential for migration of a constituent from that facility to the uppermost aquifer underlying the facility during the active life of the facility and the applicable post closure care period. The demonstration must be certified by a qualified groundwater scientist approved by the department, and be based upon

(1) site-specific, field-collected measurements, and sampling and analyses of physical, chemical, and biological processes affecting fate and transport of constituents; and

(2) constituent fate and transport predictions that anticipate the maximum likely constituent migration and that consider effects on public health and the environment.

(e) Unless suspended under (d) of this section, once established at a facility, groundwater sampling and analysis must be conducted as specified in 18 AAC 60.830 throughout the active life and post-closure care period of that facility. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 9/7/2002, Register 163; am 2/25/2022, Register 241)

Authority: AS 44.46.020 [AS 46.03.070] AS 46.03.110
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020

18 AAC 60.825 is repealed and readopted to read:

18 AAC 60.825. Groundwater monitoring systems. (a) When groundwater monitoring is required under 18 AAC 60.820, the owner or operator of the facility shall install a groundwater monitoring system that complies with the standards in (a) - (f) of this section, and conduct initial

sampling in accordance with (g) of this section. The groundwater monitoring system must include a sufficient number of wells at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of

(1) background groundwater that has not been affected by leachate from the facility; and

(2) groundwater passing the approved monitoring well locations established under (d) of this section.

(b) The number, spacing, and depths of monitoring wells must be

(1) determined based upon

(A) aquifer thickness, groundwater flow rate, and groundwater flow direction, including seasonal and temporal fluctuations in groundwater flow; and

(B) the saturated and unsaturated geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit that constitutes the lower boundary of the uppermost aquifer, including thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities; and

(2) certified by a qualified groundwater scientist or otherwise approved by the department as meeting the standards set out in this section; the scientist shall certify to the best of the scientist's knowledge that the wells are designed and placed where they are most likely to detect contamination from each waste management area; not later than 14 days after the date of the certification, the owner or operator of the facility shall submit written notification to the department that the certification is complete and shall place it in the operating record of the

facility.

(c) The location of background and downgradient monitoring wells are subject to the following considerations:

(1) the determination of background quality may be made by sampling wells that are not hydraulically upgradient of the waste management area if

(A) hydrogeologic conditions do not allow the owner or operator to determine which wells are hydraulically upgradient; or

(B) sampling at other wells will provide an indication of background groundwater quality that is at least as representative as that provided by the upgradient wells; and

(2) downgradient monitoring wells must be installed at relevant points of compliance proposed under (d) of this section and approved by the department; if a physical obstacle precludes installation of a downgradient well at an approved relevant point of compliance, the owner or operator may, with department approval, install that downgradient monitoring well at the closest practical location that is

(A) hydraulically downgradient of the relevant point of compliance;

(B) capable of detecting groundwater contamination in the uppermost aquifer; and

(C) unlikely to be affected by groundwater contamination from sources other than the landfill.

(d) The owner or operator of the facility shall propose for department approval appropriate locations for downgradient monitoring wells. Those monitoring wells

(1) may not be more than 500 feet from the waste management boundary unless a facility-wide system is approved under (e) of this section;

(2) must be located on land owned by the owner of the facility;

(3) must ensure detection of groundwater pollution in the uppermost aquifer underlying the landfill; and

(4) must be sited based upon

(A) the hydrogeologic characteristics of the facility and surrounding land;

(B) the volume and physical and chemical characteristics of the leachate, if known;

(C) the quantity and direction of the flow of groundwater;

(D) the proximity to, and groundwater withdrawal rate of, groundwater users;

(E) the availability of alternative drinking water supplies;

(F) the existing quality of the groundwater, including other sources of pollution and their cumulative effects on the groundwater, and whether the groundwater is used or might reasonably be expected to be used for drinking water;

(G) public health, safety, and welfare; and

(H) the practicable capabilities of the owner or operator to remediate contaminant releases to groundwater.

(e) If a facility has more than one waste management area, the department will approve a facility-wide groundwater monitoring system instead of separate groundwater monitoring systems for each waste management area if the facility-wide system meets the requirements of

(a) - (d) of this section and will be as protective of public health and the environment as individual monitoring systems for each area, based on the

(1) number, spacing, and orientation of the waste management areas;

(2) hydrogeologic setting;

(3) facility history;

(4) engineering design of the waste management areas; and

(5) type of waste accepted at the facility.

(f) Monitoring wells must be designed, installed, and decommissioned in accordance with (b) of this section, the department's *Monitoring Well Guidance*, September 2013, adopted by reference, and 18 AAC 80.015(d).

(g) Once the groundwater monitoring system in installed, not less than two years of initial monitoring is required in order to characterize groundwater beneath the facility, to establish background conditions upgradient of the facility, and to accumulate the data necessary for the statistical analysis under 18 AAC 60.830(g). Sampling shall be conducted in accordance with the approved groundwater monitoring plan prepared under 18 AAC 60.830 and at least one sample shall be collected from each monitoring well during each sampling event. Initial monitoring from a newly installed groundwater monitoring system must proceed as follows:

(1) at a new landfill, monitoring must be initiated at least one year before any waste being placed into the landfill and immediately after installation of the groundwater monitoring system is complete; initial sampling shall be conducted so that at least four independent samples are collected quarterly in the 12 months immediately preceding first placement of waste into the landfill and four independent samples are collected quarterly during

the 12 months immediately following; to the extent practical, each quarterly sample must represent the groundwater conditions of the season in which the sample is collected; and

(2) at an existing facility or a lateral expansion of an existing facility, groundwater monitoring must be initiated immediately after installation of the groundwater monitoring system is complete; initial sampling shall be conducted so that at least four independent samples are collected quarterly from each well during the first and second years following system installation; to the extent practical, each quarterly sample must represent the groundwater conditions of the season in which the sample is collected.

(h) After completing two years of initial groundwater monitoring in accordance with (g) of this section, as applicable, the owner or operator of the facility shall use the data collected from each monitoring well that is located hydraulically upgradient of the facility or that meets the requirements of (c)(1) of this section to establish background groundwater quality for each of the monitoring constituents established under 18 AAC 60.840. The data collected from all wells constituting the groundwater monitoring system shall be used to evaluate whether groundwater quality is subject to seasonal variability.

(i) After completing two years of initial groundwater monitoring in accordance with (g) of this section, as applicable, the owner or operator of the facility shall continue monitoring at a frequency established by the department. The frequency will be no less than annual and will be based on consideration of

(1) the lithology of the aquifer and unsaturated zone;

(2) the hydraulic conductivity of the aquifer and unsaturated zone;

(3) the groundwater flow rates;

(4) the minimum distance between upgradient edge of the waste management area and downgradient monitoring well screen;

(5) the resource value of the aquifer;

(6) evidence of groundwater or surface water contamination;

(7) evidence of seasonal variability in groundwater quality; and

(8) the age and design of the landfill. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 3/25/2022, Register 241)

Authority: AS 44.46.020 [AS 46.03.070] AS 46.03.800
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020 AS 46.03.110

Editor's note: The document adopted by reference in this section, ***Monitoring Well Guidance*, September 2013** [RECOMMENDED PRACTICES FOR MONITORING WELL DESIGN, INSTALLATION, AND DECOMMISSIONING, APRIL 1992], may be reviewed at the department's Juneau, Anchorage, and Fairbanks offices, **and** [IS AVAILABLE FOR REVIEW AT THE OFFICE OF THE LIEUTENANT GOVERNOR, OR] may be obtained from the **department's website at http://dec.alaska.gov/spar/csp/guidance-forms/** [DEPARTMENT].

18 AAC 60.830 is repealed and readopted to read:

18 AAC 60.830. Groundwater sampling and analysis. (a) When groundwater monitoring is required at a facility under 18 AAC 60.820, the owner or operator shall prepare a

groundwater monitoring plan that includes a quality assurance project plan and that includes consistent sampling and analytical procedures that will ensure that groundwater monitoring in each monitoring event will accurately document groundwater quality in all wells constituting the groundwater monitoring system installed under 18 AAC 60.825.

(b) The groundwater monitoring plan must conform to the requirements of (c) - (j) of this section and any site-specific requirements that the department determines are necessary, and must receive the department's approval. The approved groundwater monitoring plan shall be placed in the operating record of the facility and the owner or operator of the facility shall revise the groundwater monitoring plan as required by the department at the time of permit renewal, and also as needed in response to a change in

(1) the groundwater monitoring system; or

(2) the groundwater monitoring program that is

(A) necessitated by a change in groundwater quality in the uppermost aquifer beneath the facility; or

(B) required by the department.

(c) The owner or operator shall ensure that the groundwater monitoring plan includes sample collection procedures and analytical methods that are appropriate for groundwater sampling and that yield accurate measurements of monitoring parameters and analyte concentrations at an acceptable level of sensitivity. The groundwater monitoring plan must include the procedures and techniques for

(1) sample collection, including groundwater elevation measurements;

(2) sample preservation and shipment;

(3) analytical procedures and sensitivity requirements;

(4) chain of custody control;

(5) quality assurance and quality control;

(6) compliance with (g) of this section;

(7) evaluating the condition of the well at the time that samples are taken;

(8) monitoring well maintenance; and

(9) data processing and management.

(d) Groundwater samples may not be field-filtered during collection. They must be analyzed for total constituent concentrations.

(e) During each monitoring event, measurements to establish groundwater elevations shall be taken in all wells constituting the groundwater monitoring system, before purging the wells and within a period of time short enough to avoid temporal variations in groundwater elevation that could preclude accurate estimation of groundwater flow rate and direction.

(f) The number of samples collected to establish groundwater quality must be consistent with the statistical methods selected under (g) of this section.

(g) The owner or operator shall specify in the groundwater monitoring plan one of the following statistical methods to be selected from and used in evaluating groundwater monitoring data for each constituent retained for statistical analysis. The statistical method selected must be conducted separately for each constituent in each well and the statistical analyses under each method must be developed in consideration of the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Unified Guidance* (EPA 530-F-09-007, March 2009), adopted by reference, unless an alternative approach is approved by the department. The

statistical methods to be selected from and used are

(1) a parametric analysis of variance, followed by multiple-comparisons procedures to identify statistically significant evidence of contamination; this method must include estimation and testing of the contrasts between the mean concentration in each compliance well and the background mean concentration for each constituent;

(2) an analysis of variance based on ranks, followed by multiple-comparisons procedures to identify statistically significant evidence of contamination; this method must include estimation and testing of the contrasts between the median concentration in each compliance well and the background median concentration for each constituent;

(3) a tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit;

(4) a control chart approach that gives control limits for each constituent; or

(5) another approved statistical test method that meets the performance standards of (h) of this section.

(h) A statistical method selected under (g) of this section must comply with the following performance standards, as appropriate:

(1) the statistical method used to evaluate groundwater monitoring data must be appropriate for the distribution of the constituent concentration data; if the distribution of the constituent concentration data is shown by the owner or operator to be inappropriate for a normal theory test, then the data must be transformed, or a distribution-free theory test must be used; if the distributions for the constituents differ, more than one statistical method identified under (g)

of this section might be needed;

(2) if an individual well comparison procedure is used to compare an individual well's constituent concentration with background constituent concentrations or a groundwater protection standard, the test must be done at a Type I error level no less than 0.01 for each testing period; if a multiple-comparisons procedure is used, the Type I experiment-wise error rate for each testing period must be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons must be maintained; this performance standard does not apply to tolerance intervals, prediction intervals, or control charts;

(3) if a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated parameter values must be protective of public health and the environment; the parameters must be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent being analyzed;

(4) if a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain must be protective of public health and the environment; these parameters must be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent being analyzed;

(5) the statistical method must account for data below the limit of detection, as that is defined in the approved groundwater monitoring plan or quality assurance project plan, in a manner that is protective of public health and the environment;

(6) the limit that is used in the statistical method must be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility; and

(7) if necessary, the statistical method must include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(i) The owner or operator of the facility shall determine whether there is a statistically significant increase over background values for each constituent required to be analyzed in each well by the particular groundwater monitoring program that applies to the facility, as determined under 18 AAC 60.840. To determine whether a statistically significant increase has occurred, the owner or operator of the facility shall compare the concentration of each constituent detected in a monitoring well to the background value of that constituent, according to the statistical methods and performance standards set out in (g) and (h) of this section.

(j) The owner or operator of the facility shall furnish groundwater sampling data and analyses to the department in the format approved by the department not later than 90 days after completing each sampling event or on an alternate date or schedule approved by the department, and shall maintain in the operating record of the facility a complete record of all groundwater monitoring conducted under this section. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 2/25/2022, Register 241)

Authority:	AS 44.46.020	[AS 46.03.070]	AS 46.03.800
	AS 46.03.010	AS 46.03.100	AS 46.03.810
	AS 46.03.020	AS 46.03.110	

18 AAC 60.840 is repealed and readopted to read:

18 AAC 60.840. Constituents for groundwater monitoring. (a) The owner or operator of a Class I MSWLF shall

(1) under a detection monitoring program, monitor groundwater for

(A) all analytes listed in 40 C.F.R. Part 258, Appendix I, as amended through August 1, 2005, adopted by reference, unless a reduced list of constituents is designated under 18 AAC 60.850(a); and

(B) any additional analytes and parameters that the department determines are necessary based on site-specific conditions and the type of waste disposed in the facility; or

(2) under an assessment monitoring program, monitor groundwater in accordance with 18 AAC 60.860 for

(A) all analytes listed in 40 C.F.R. Part 258, Appendix II, as amended through August 1, 2005, adopted by reference, unless a reduced list of constituents is designated under 18 AAC 60.860; and

(B) any additional analytes and parameters that the department determines are necessary under the facility's detection monitoring program.

(b) The owner or operator of a facility subject to groundwater monitoring, other than a Class I MSWLF, shall

(1) under a detection monitoring program, monitor groundwater for

(A) all analytes listed in 40 C.F.R. Part 258, Appendix I, as amended through August 1, 2005, adopted by reference, unless a reduced list of constituents is

designated under 18 AAC 60.850(a); and

(B) any additional analytes and parameters that the department determines are necessary based on site-specific conditions and the type of waste disposed in the facility; or

(2) under an assessment monitoring program, monitor groundwater in accordance with 18 AAC 60.860 for

(A) all analytes listed in 40 C.F.R. Part 258, Appendix II, adopted by reference, unless a reduced list of constituents is designated under 18 AAC 60.860; and

(B) any additional analytes and parameters that the department determines are necessary under the facility's detection monitoring program.

(c) For purposes of (a)(1)(B) or (2)(B) or (B)(1)(B) or (2)(B) of this section, the department will determine which additional analytes and parameters are necessary on a case-by-case basis after considering the following factors:

(1) the geological and hydrogeological characteristics of the site;

(2) the impact of manmade and natural features on the effectiveness of groundwater monitoring;

(3) climatic factors that might influence the reliability of groundwater monitoring procedures;

(4) the effectiveness of indicator analytes and parameters in detecting a release; and

(5) the characteristics of the waste disposed in the landfill.

(d) For purposes of (a)(1)(B) or (2)(B) or (B)(1)(B) or (2)(B) of this section, the

department may add analytes and parameters to the groundwater monitoring program by requiring a revision of the groundwater monitoring plan under 18 AAC 60.830(b) at any time during the active life of the facility based on the type of waste disposed in the facility and available analytical data. The department may also delete analytes and parameters from the groundwater monitoring program as specified in 18 AAC 60.850(a). (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 3/25/2022, Register 241)

Authority: AS 44.46.020 [AS 46.03.070] AS 46.03.800
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020 AS 46.03.110

[EDITOR'S NOTE: THE DOCUMENTS ADOPTED BY REFERENCE IN THIS SECTION MAY BE REVIEWED AT THE DEPARTMENT'S JUNEAU, ANCHORAGE, AND FAIRBANKS OFFICES AND, WITH THE EXCEPTION OF THE C.F.R. DOCUMENT, ARE ALSO ON FILE IN THE OFFICE OF THE LIEUTENANT GOVERNOR. STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER IS AVAILABLE FROM THE AWWA BOOKSTORE, 6666 WEST QUINCY AVENUE, DENVER, COLORADO 80235. METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, EPA600/4-79-020, REVISED MARCH 1983; METHODS FOR ORGANIC CHEMICAL ANALYSIS OF MUNICIPAL AND INDUSTRIAL WASTEWATER, EPA600/4-82-057, JULY 1982; AND TEST METHODS FOR EVALUATING SOLID WASTE, PHYSICAL/CHEMICAL METHODS (SW-846) ARE AVAILABLE FROM NATIONAL TECHNICAL INFORMATION SERVICE, UNITED STATES DEPARTMENT OF

COMMERCE, 5285 PORT ROYAL ROAD, SPRINGFIELD, VIRGINIA 22161. DEC ANALYTICAL METHODS AK101, AK102, AND AK103 ARE AVAILABLE FROM THE DEPARTMENT, 410 WILLOUGHBY AVENUE, JUNEAU, ALASKA 99801-1795.

ON 6/2/99, AS REQUIRED BY AS 44.62.245, THE DEPARTMENT GAVE NOTICE THAT THE FOLLOWING AMENDED VERSION OF MATERIAL, PREVIOUSLY ADOPTED BY REFERENCE IN 18 AAC 60.840, TABLE F (FORMERLY TABLE J), WOULD BE IN EFFECT ON 6/25/99: DEC ANALYTICAL METHODS AK101 (METHOD FOR THE DETERMINATION OF GASOLINE RANGE ORGANICS), AK102 (METHOD FOR THE DETERMINATION OF DIESEL RANGE ORGANICS), AND AK103 (METHOD FOR THE DETERMINATION OF RESIDUAL RANGE ORGANICS), FROM THE DEPARTMENT'S UNDERGROUND STORAGE TANK PROCEDURES MANUAL, AS REVISED AS OF 3/1/99 AND ADOPTED BY REFERENCE IN 18 AAC 78.007. THE AMENDED VERSION MAY BE REVIEWED AT THE DEPARTMENT'S JUNEAU, ANCHORAGE, AND FAIRBANKS OFFICES.

AS OF REGISTER 151, OCTOBER 151, OCTOBER 1999, THE REGULATIONS ATTORNEY UPDATED A CROSS-REFERENCE IN 18 AAC 60.840, TABLE F (FORMERLY TABLE J), NOTE 2, SO THAT THE PROVISION REFERS TO 18 AAC 78.007 INSTEAD OF 18 AAC 78.090, REFLECTING AMENDMENTS TO 18 AAC 78 THAT BECAME EFFECTIVE 1/22/99, REGISTER 149.

AS OF REGISTER 224 (JANUARY 2018), THE REGULATIONS ATTORNEY MADE TECHNICAL CORRECTIONS UNDER AS 44.62.125(b)(6), to 18 AAC 60.840, CHANGING THE TABLE HEADER FROM "TABLE J" TO "TABLE F" AND CHANGING CROSS-

REFERENCED TABLE HEADERS FROM "TABLE J" TO "TABLE F". THESE CORRECTIONS REFLECT THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION'S DELETION OF FORMER TABLES A - D AS PART OF AMENDMENTS TO 18 AAC 60.430 AND 18 AAC 60.440 THAT TOOK EFFECT OCTOBER 27, 2017, REGISTER 224.]

18 AAC 60.850 is repealed and readopted to read:

18 AAC 60.850. Detection monitoring program. (a) Detection monitoring at the frequency established under 18 AAC 60.825(i) is required in all groundwater monitoring wells at facilities required to conduct groundwater monitoring under this chapter. At a minimum, except as provided in (1) of this subsection, detection monitoring requires monitoring for the analytes and parameters required for the facility by the department under 18 AAC 60.840. Upon the request of the owner or operator of the facility, the department may

(1) remove any of the analytes and parameters required under 18 AAC 60.840 if the owner or operator of the facility demonstrates that the removed constituents are not reasonably expected to be in or derived from the waste stored, treated, or disposed in the facility; and

(2) establish an alternative list of inorganic indicator analytes for the facility, instead of some or all of the heavy metals identified in 40 C.F.R. Part 258, Appendix I, as amended through August 1, 2005, adopted by reference; if the owner or operator of the facility demonstrates to the department's satisfaction that the alternative analytes provide a reliable indication of inorganic releases from the facility to the groundwater; the department will

determine an alternative list with consideration given to the

(A) types, amounts, and concentrations of constituents in wastes managed at the facility;

(B) mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the facility;

(C) detectability of indicator analytes or parameters, waste constituents, and reaction products in the groundwater; and

(D) concentration of, or values and coefficients-of-variation for, inorganic analytes in the groundwater background.

(b) If the owner or operator determines under 18 AAC 60.830(i) that there is a statistically significant increase over background values for one or more monitored constituents in any downgradient monitoring well, the owner or operator of the facility

(1) shall, not later than 14 days after making the determination, place a notice in the operating record of the facility indicating which constituents have shown statistically significant changes over background values, and submit written notification to the department that this notice was placed in the operating record; and

(2) shall, not later than 90 days after making the determination, either

(A) establish an assessment monitoring program that meets the requirements of 18 AAC 60.860, including a revised and approved monitoring plan; or

(B) receive department approval of, and enter into the operating record, a report certified by either a qualified groundwater scientist or another person preapproved by the department that proves that an assessment monitoring program is not necessary

because

(i) a source other than the monitored waste management area caused the pollution; or

(ii) the statistically significant increase determination resulted from an error or from a natural variation in groundwater quality. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 2/25/2022, Register 241)

Authority: AS 44.46.020 AS 46.03.020 AS 46.03.100
AS 46.03.010 [AS 46.03.070] AS 46.03.110

18 AAC 60.860 is amended to read:

18 AAC 60.860. Assessment monitoring and corrective action. A person subject to 18 AAC 60.800 - 18 AAC 60.850 shall perform assessment monitoring and corrective action in accordance with **18 AAC 60.830 and 18 AAC 60.840, as applicable, and** 40 C.F.R. 258.55 - 258.58, as amended through **August 1, 2005 and** [DECEMBER 6, 1995, WHICH ARE] adopted by reference. The terms "municipal solid waste landfill," "MSWLF," and "MSWLF Unit" used in those federal regulations include all facilities required to have groundwater monitoring under this chapter. (Eff. 1/28/96, Register 137; am 2/25/2022, Register 241)

Authority: AS 44.46.020 [AS 46.03.070] AS 46.03.110
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020

18 AAC 60.990(31) is amended to read:

(31) "conditionally exempt small quantity generator" has the meaning given **for "very small quantity generator"** in **40 C.F.R. 260.10, as amended May 30, 2017** [40 C.F.R. 261.5, REVISED AS OF JULY 1, 1998], adopted by reference;

18 AAC 60.990(48) is repealed:

(48) repealed 2/25/2022;

18 AAC 60.990(55) is repealed:

(55) repealed 2/25/2022;

18 AAC 60.990(115)(D) is amended to read:

(D) Category II nonfriable asbestos-containing material that has a high probability of becoming, or has become, crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of a demolition or renovation operation [REGULATED BY 40 C.F.R. 61.145, REVISED AS OF JULY 1, 1997,] or in the course of a disposal operation regulated under this chapter;

18 AAC 60.990 is amended by adding a new paragraph to read:

(164) "constituents of concern" means analytes, parameters, and substances as set out in 40 C.F.R. Part 258, Appendices I and II, as amended through August 1, 2005, adopted by reference, and other substances that the department identifies based on the type of waste stored or disposed of at a particular solid waste disposal facility. (Eff. 1/28/96, Register 137; am

10/29/98, Register 148; am 7/11/99, Register 151; am 6/30/2002, Register 162; am 9/7/2002, Register 163; am 9/5/2010, Register 195; am 4/12/2013, Register 206; am 10/27/2017, Register 224; am 2/25/2022, Register 241)

Authority: AS 44 46.020 AS 46.03.100 AS 46.03.810

AS 46 03.010 AS 46.03.110 AS 46.06.010

AS 46.03.020 AS 46.03.800 AS 46.06.080